Flightcell Iridium 9555 Cradle Mk 4

Installation Manual

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1 Version history

Issue	Date	Author	Change note number	Description
Issue 1	08 Sep 2009	A. Whitlock		Document created.
Issue 2 - CURRENT	25 June 2013	J. Mace	FCN0497	Update part number and title page. Reference to installation with Flightcell VAM

2 Introduction

The Flightcell Iridium 9555 Cradle is used to install an Iridium 9555 satellite phone in an aircraft or vehicle. The phone cradle provides secure mounting for the Iridium handset and interfaces all necessary antenna, power, voice and data connections.

The cradle also contains noise suppression technology to reduce intrusion of aircraft power supply noise into the audio system.

Flightcell has designed this product to enable integration of the phone into existing audio systems, or as part of the built-in Flightcell DZM voice, data and tracking system.

Installed with the Flightcell DZM, your Iridium satellite phone can be mounted anywhere on the aircraft or vehicle, as it is controlled remotely from the Flightcell DZM user interface.

2.1 About this installation manual

This manual is intended for use by engineers installing and maintaining the Flightcell Iridium 9555 Cradle. It describes the physical, mechanical and electrical characteristics and installation requirements for the product.

For further assistance, please contact Flightcell International Ltd.

2.2 Other useful resources

Find further information on installing and operating all Flightcell products from the Flightcell website at http://www.flightcell.com/support.aspx, or contact Flightcell International Ltd directly. Contact details are provided at the end of this document.

3 Specifications

Part number		CRP_04001 (Old part number FC9555/D25M4M)	
Material		Machined from aluminium 6061	
Input voltage		12-32 V DC	
Power supply current		1ms inrush <=10.0A	
		100ms inrush <=250mA	
		Operating current 250mA max	
Output voltage (to Iridium **p**hone)		5.0V	
MIC audio		Sensitivity as per satphone	
SPKR audio		Level as per satphone	
Satphone data		RS-232 levels, 9600bps	
Dimensions	Width overall	70mm	2.76”
	Depth, with or without phone	65mm	2.56”
	Height		
	Including satphone	236mm	9.30”
	Excluding satphone	222mm	8.74”
Weight	Including satphone	956g	33.7oz
	Excluding satphone	680g	24.0oz
Main connector on cradle	DB25 male (8FTM25P-30N1-FEC)		
Antenna connector	TNC		

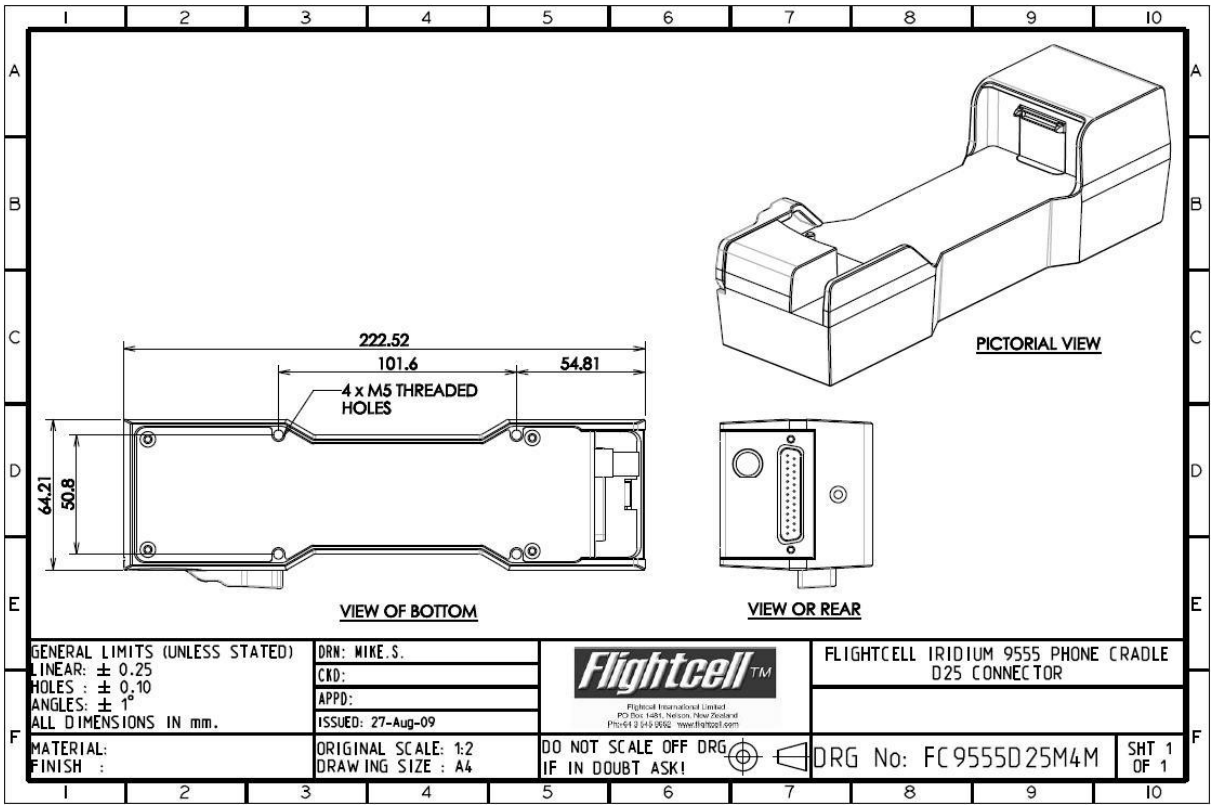
4 Installing your Flightcell Iridium 9555 Cradle

4.1 Mounting the phone cradle within your aircraft or vehicle

Use 4 x M5 bolts at the four mounting points on the back of the phone cradle. These bolts are fastened in to the back of the phone cradle through a bulkhead or other similar mounting point.

The length of the bolts should be the thickness of the mounting surface plus 10-15mm.

The diagram below shows dimensions and locations of mounting points.



4.2 Audio connection

Audio is passed between phone cradle and phone using the digital audio connection in the base of the phone. The headset audio jack on the side of the phone is NOT used.

4.2.1 Connection to the audio panel using a Flightcell DZM

If the cradle is used to connect an Iridium 9555 handset to a Flightcell DZM, refer to the installation manual and interconnect drawings for the applicable model of DZM. These documents are supplied with the DZM or can be downloaded from the Flightcell support page at http://www.flightcell.com/support.aspx.

4.2.2 Connection to the audio panel without using a Flightcell DZM

The cradle is primarily designed to be used in conjunction with a Flightcell DZM. If it is to be connected to the audio panel without a DZM, two methods can be used:

4.2.2.1 Connection to a cellphone port on an audio panel

If the aircraft audio system has a cellphone port, the cradle audio input and output can be connected to the audio panel output and input, respectively. Refer to the audio panel's installation manual for details.

4.2.2.2 Connection using a Flightcell VAM

Otherwise to connect the cradle to an audio panel or ICS, it is necessary to use an additional module to adjust input and output levels to and from the cradle to match the appropriate levels on the audio panel/ICS.

The Flightcell VAM (Versatile Audio Module) provides a means of connecting the cradle to an audio panel. The function of the VAM is to

- Match impedance and voltage levels for the cradle to those on the audio panel
- Provide microphone bias voltage (which is typically required when connecting to a high-impedance headset)
- Provide galvanic isolation between input and output
- Provide sidetone.

Instructions on VAM installation and configuration are provided in the installation manual (MAN_VAM_ENGALL_OperatingManual_1.2) available on the Flightcell support page http://www.flightcell.com/support.aspx .

4.3 Data connection

The main connector on the phone cradle is wired for an RS232 serial data connection. This is converted in the cradle to USB for the phone's USB connection.

If a USB connection to the phone is required, an alternative model of cradle with direct USB connection is available. Contact Flightcell International for further information.

4.4 D25 connector

The main and antenna connectors are recessed into the base of the phone cradle.

The D25 connector contains all required I/O connections to charge the satellite phone and access the serial port and audio connection.

Cradle main connector (D25 male) part number - Multicomp 8FTM25P-30N1-FEC (or equivalent)

Mating connector (D25 female) part number - Multicomp 5502-25SA-01-F1 (or equivalent)

Connector pinouts:

Pin	Function	Input to/output from phone cradle	Notes
1	Do not connect		
2	Do not connect		
3	Do not connect		
4	Do not connect		
5	RI	Output	
6	Power -	Input	
7	GND		Signal GND
8	Data RX	Output	
9	DTR	Input	Flow control
10	RTS	Input	Flow control
11	GND GPO	Output	
12	MIC +	Input	
13	SPK +	Output	
14	Do not connect		
15	Do not connect		
16	DCD	Output	RS232 flow control
17	Do not connect		
18	DSR	Output	RS232 flow control
19	PWR +	Input	
20	GND DATA		
21	SAT TX	Input	
22	CTS	Output	
23	GPO		General Purpose Output; this is used as an output in custom applications of the phone cradle.
24	MIC	Input	
25	SPK -	Output	
Shell	Chassis ground		

4.5 Wiring to the phone cradle

The following guidelines should be followed when constructing wiring looms:

- Power cables should be 22AWG stranded. For example, M22759/34-22-9
- Other cables may be 22 or 24AWG stranded, screened where indicated. For example, M27500/-24SB2T14
- Screened pairs should be used for:
  - MIC +/-
  - SPK +/-
  - RS232 Tx/Rx
- The other flow control lines RTS, CTS, DSR, DTR, RI, DCD can utilise either screened or unscreened cables in any groupings. Where screened cable is used, we recommend that it be grounded at one end only to minimize ground loops.
- Where the GPO signal is used we recommend using a single screened cable, with GPO GND connected to the screen and GPO connected to the core.

4.6 Antenna connection

The Flightcell Iridium 9555 Cradle has a single TNC antenna connector to connect the phone to an approved Iridium antenna. Please contact Flightcell International or your Flightcell supplier for information on antenna options.

Iridium antenna cables must be selected to keep signal loss within accepted levels. Total signal loss on the Iridium connection between the cradle and the antenna should not exceed 3dB at 1645MHz.

The maximum length recommended for different common antenna cable types is:

Cable Length	Cable Specification	Notes
Up to 3m	RG58C/U	
Up to 6.5m	LMR200 RG142A/U-9006 cellfoil	
Up to 8m	RG213	It is recommended that the antenna cable be reduced to RG58 for the last 300mm next to the cradle to assist with installation.
Up to 17m	LMR400	
Up to 26m	LMR600	

4.7 Power supply to the Iridium phone

4.7.1 Powering and charging the phone

The Iridium phone cradle contains a power supply that manages the voltage supplied to the phone to levels required to safely charge and operate the phone. Power is supplied via the connector on the base of the Iridium phone.

4.7.2 Automated power on and off

The Iridium phone cradle is designed to power the Iridium phone on and off when the aircraft or vehicle is powered up or down. This is done to ensure the phone is always on when the aircraft is operating, and the phone is always off (and batteries are not being run down) when no power is being supplied from the aircraft.

5 Using the Iridium phone with the Flightcell Iridium 9555 Cradle

5.1 Installing and releasing your Iridium satellite phone

NOTE! The Iridium 9555 phone has an antenna socket on the back near the top. The handset is delivered with a rubber bung in this socket. It is important to remove this bung before attempting to place the phone in the cradle. Failure to do so risks serious damage to the phone.

To install:

Locate the retaining latch on the top right of the cradle, and rotate clockwise.

Slide the base of the Iridium phone downwards into the Phone Cradle, aligning the slots on either end of the phone's connector with the two alignment pins on the end of the cradles' connector.

Rotate the top of the handset back onto the cradle; the antenna connector will slip into the antenna connector hole in the back of the phone. Then rotate the retaining latch anti-clockwise to lock the phone in place.

To release the phone, reverse the above steps

6 Warranty and contact details

6.1 Limited warranty for your Flightcell Iridium 9555 cradle

Flightcell International Ltd's quality products are proudly designed and manufactured to the highest standards in New Zealand.

Your Flightcell Iridium 9555 Cradle is warranted for 2 years from date of sale.

The warranty is void if any labels are removed or if it is determined that your Flightcell DZM has been:

- Connected to a power supply delivering more than 32 Volts;
- Connected with reverse polarity;
- Installed in direct contravention to the guidelines outlined in the technical installation manual;
- Physically damaged, or a fault has occurred due to the product being used beyond what is considered normal use, causing unusual deterioration of the product.

If the product is deemed to be faulty or in need of repair, please contact Flightcell International Ltd to obtain a Returned Materials Authorization.

6.2 Flightcell International contact details

Flightcell International Ltd

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